

# *Tiara*<sup>™</sup>

## Instruction and Reference Guide

Model BLTR16



**FOR THE LOVE OF SEWING**

To register your machine warranty and receive Baby Lock product updates and offers, go to [babylock.com/profile](http://babylock.com/profile). If you have questions with registration, visit your Authorized Baby Lock Retailer.

Baby Lock Consumer Helpline: 800-313-4110

*[www.babylock.com](http://www.babylock.com)*

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## **Congratulations on your purchase of the Baby Lock Tiara**

You haven't just purchased a quilting machine, you've joined the Baby Lock family and we welcome you.

Baby Lock is committed to innovation, reliability, customer service and education. Our quilting machines are designed for quilters and we are committed to your quilting success.

With that in mind, we invite you to bookmark our website: [www.babylock.com](http://www.babylock.com) and invite you to visit to learn more about the art of quilting.

Remember, if you ever have questions, your authorized Baby Lock retailer can help you. If your retailer is not available, contact Baby Lock directly by visiting our website, [www.babylock.com](http://www.babylock.com) or contacting our Baby Lock Consumer Helpline at 1-800-313-4110, Monday-Friday, 8-6 CST.

# IMPORTANT INFORMATION: REGULATIONS

## Federal Communications Commissions (FCC) Declaration of Conformity (For USA Only)

Responsible Party: Tacony Corporation  
1760 Gilsinn Lane  
Fenton, MO 63026

declares that the product

Product Name: Baby Lock Tiara Model BLTR16

complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult the retailer or an experienced radio/TV technician for help.
- Changes or modifications not expressly approved by the manufacturer or local sales distributor could void the user's authority to operate the equipment.

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## Canadian Department of Communications Compliance Statement (For Canada Only)

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

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## Radio Interference (Other than USA and Canada)

This machine complies with EN55022 (CISPR Publication 22) /Class B and AUS/NZ 55022/Class B.

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# IMPORTANT SAFETY INSTRUCTIONS

Read all instructions before using.

When using this machine, basic safety precautions should always be taken, including the following:

Read all instructions before using.

## **DANGER - To reduce the risk of electric shock:**

- A quilting machine should never be left unattended when plugged in. Always unplug the machine from the electrical outlet immediately after using and before cleaning.

## **WARNING - To reduce the risk of burns, fire, electric shock, or injury to persons:**

- Do not allow to be used as a toy. Close supervision is necessary when this quilting machine is used by or near children.
- Use this quilting machine only for its intended use as described in this manual. Use only attachments recommended by the manufacturer as contained in this manual.
- Never operate this quilting machine if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Return the quilting machine to the nearest authorized Baby Lock retailer for examination, repair, electrical or mechanical adjustment.
- Never operate the machine with any air openings blocked. Keep ventilation openings of the machine free from the accumulation of lint, dust, and loose cloth.
- Never drop or insert any object into any opening.
- Do not use outdoors.
- Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
- To disconnect, turn the machine switch to the symbol "O" position which represents off, then remove plug from outlet.
- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Keep fingers away from all moving parts. Special care is required around the machine needle area.
- Always use the proper needle plate. The wrong plate can cause the needle to break.
- Do not use bent needles.
- Switch the machine to the symbol "O" position to turn it off when making any adjustments in the needle area, such as threading needle, changing needle, threading bobbin, or changing presser foot, and the like.
- Always unplug the machine from the electrical outlet when removing covers, lubricating, or when making any other user servicing adjustments mentioned in the instruction manual.
- This sewing machine is not intended for use by young children or infirm persons without supervision.
- Young children should be supervised to ensure that they do not play with this machine.

## **SAVE THESE INSTRUCTIONS**

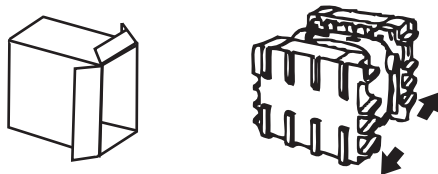
**This machine is intended for household use.**

### **Disclaimer**

Baby Lock and its authorized retailers are in no way legally responsible or liable for damage to the Baby Lock Tiara when used improperly or not in accordance with the guidelines stated in this manual or when used on machine quilting tables not recommended by Baby Lock.

# HOW TO UNPACK/REPACK THE MACHINE

Keep the carton and packing materials. You will need them in the event that you need to return the machine to your authorized Baby Lock retailer or send it for repair. If you do not pack the machine properly or if you do not use the correct packaging materials, the machine could be damaged. Baby Lock is not liable for damage that occurs during return shipping. Follow the diagram below to unpack and repack the machine.



## IMPORTANT

These packaging materials are designed to prevent the machine from being damaged. Keep them in case you need to bring this machine to your authorized Baby Lock retailer or send it for repair.

## PLEASE READ THESE INSTRUCTIONS BEFORE USING THE MACHINE.

### To use the machine safely

1. Carefully watch the needle while sewing. Do not touch the handwheel, take up lever, needle or other moving parts.
2. Turn the machine off and unplug the cord in the following cases
  - when you have stopped using the machine;
  - when you replace or remove the needle or any other part;
  - in case of failure when you use the machine;
  - when you check or clean the machine;
  - when you leave the machine unattended.
3. Connect the machine directly to the wall outlet. Do not use extension cords.

### To increase the life of your machine

1. Do not store this machine in areas exposed to direct sunlight or high humidity. Never use or store the machine near a heater, an iron, a halogen lamp or other hot objects.
2. Use only neutral soaps or detergents to clean the machine. Benzene, solvents and scouring powders can damage the case and the machine and therefore should never be used.
3. Do not drop or bump the machine.
4. Always consult the manual to replace or fix the presser foot, needle or any other part of the machine.

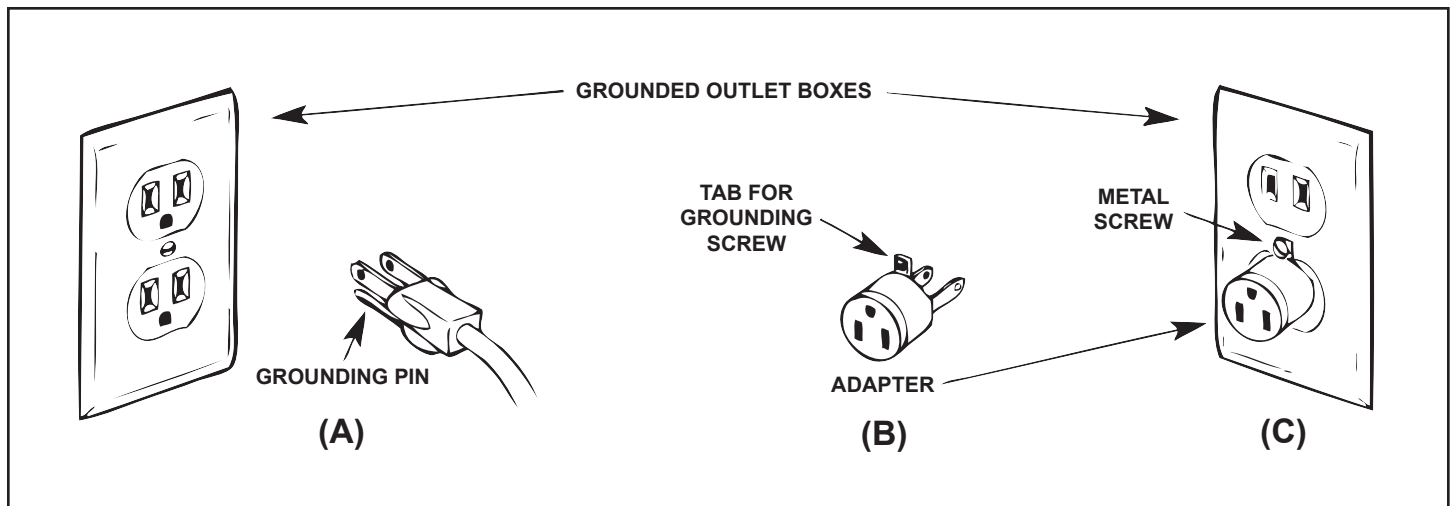
### To repair or adjust the machine

If the machine malfunctions or requires adjustment, first check the troubleshooting chart in the appendix to inspect and adjust the machine yourself.

For more product information and updates, visit our website at [www.babylock.com](http://www.babylock.com).

The contents of this manual and product specifications are subject to change without prior notice.

# GROUNDING



*Figure 1*

This product is for use on a nominal 120 V or nominal 220 V circuit, and has a grounding plug that looks like the plug illustrated in sketch A in Figure 1. A temporary adapter, which looks like the adapter illustrated in sketches B and C, may be used to connect this plug to a 2-pole receptacle as shown in sketch C if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by the metal screw.

**Note:** In Canada, the use of a temporary adapter is not permitted by the Canadian Electric Code.

## Safety Section

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Please note:** Do not operate your Baby Lock Tiara quilting machine until you have completely read the information contained in this manual. Please keep all packaging and order information for warranty purposes.

1. The Baby Lock Tiara is very heavy. Never attempt to lift it alone – always use two people when lifting.
2. Always unplug the Baby Lock Tiara from the electrical outlet when performing any maintenance, changing the needle, removing thread locks, or when left unattended.
3. Keep fingers away from all moving parts. Use caution around the needle or sharp external components.
4. Change the needle often. Do not use bent or dull needles. “Every quilt deserves a new needle”.
5. Switch the power off when making any adjustments in the needle or bobbin area, such as threading the needle, installing the bobbin case, or when oiling or cleaning.
6. Never drop or insert foreign objects into any opening.
7. The Baby Lock Tiara should only be used indoors; away from moisture.
8. The Baby Lock Tiara should not be stored or used in extreme temperatures.
9. Use the Baby Lock Tiara only for its intended use as described in this manual.
10. Use only attachments recommended by the manufacturer.
11. To disconnect from the wall outlet, push the switch to the off position, then remove the plug from outlet pulling from the plug, not the cord. Never operate the Baby Lock Tiara if the cord is damaged or not working correctly. If a mechanical or electrical problem is encountered, return the Baby Lock Tiara to your authorized Baby Lock retailer for examination, repair, electrical or mechanical adjustment.

## Quick Facts

The Baby Lock Tiara utilizes high-tech electronics and an innovative touch-pad user interface to offer greater functionality and ease of operation to home quilters than ever before conceived in the quilting industry. The Baby Lock Tiara quilting machine is a high quality machine that incorporates very robust design features and is very easy to service.

**Throat Dimensions:** 8.25” X 16”  
(245mm X 610mm)

**Quilting Speed:** Maximum: 1500 SPM

**Needle System:** 134 (135 X 7)

**Needle Sizes:** 12/80 - 20/125

**Hook System:** Rotary, Vertical,  
M-class bobbin

**Bobbin Type:** Aluminum, Class M

**Bobbin Case:** Type MF

**Motor Type:** Brushless DC

**Needle Positioning:** Up and down, tie-off stitch

**Electrical Power:** 90 – 264 VAC, 47-63Hz,  
300W peak

**LED Power Consumption:** 2.25W

**Hopping Foot Stroke/Lift:** 5mm

**Needle Bar Stroke:** 35.3mm

**Take-Up Stroke:** 73mm

**Lubrication,  
main components:** Kluber Lube, permanent

**Lubrication of hook:** Velocite 10, Texaco 22

### *Disclaimer*

*Baby Lock and its authorized retailers are in no way legally responsible or liable for damage to the Baby Lock Tiara when used improperly or not in accordance with the guidelines stated in this manual or when used on home machine quilting tables not recommended by Baby Lock.*



## Package Contents/Included Accessories

### Box 1 of 2

Part Name	Part Code
Baby Lock Tiara Quilting Machine	BLTR16A
Instruction Manual	IBBLTR16
Class M Bobbins (5 pieces)	BLJ-BOB (3 pkg.)
Needle size 16 (1 pkg. of 10)	134FG-100
Needle size 18 (1 pkg. of 10)	134FG-110
Bobbin Case	JW000586
Thread Antenna	JW010214
Oiler	JW010272
Power Cord	JW020277
Brush	JW010270
Disc-shaped Screwdriver	XC1074051
Screwdriver (bobbin case)	JW010269
3.0mm Allen Wrench	JW010287
5.0mm Allen Wrench	JW010289



### Box 2 of 2

Variable-Speed Bobbin Winder	BLTR16B
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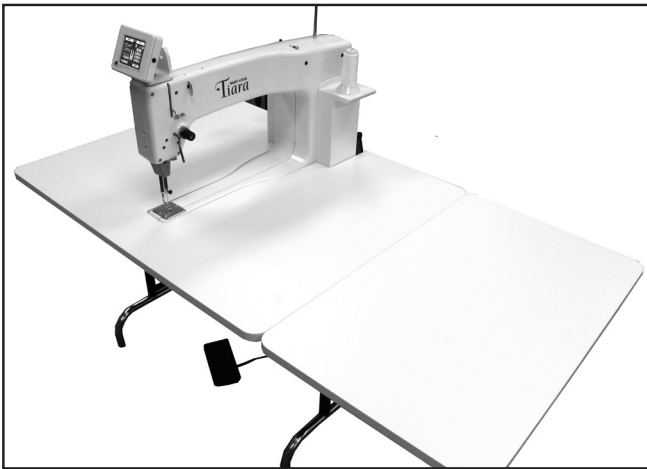
### Table Box

Tiara Quilting Table	BLTRT16
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## Optional Accessories *(available from your authorized Baby Lock retailer)*

**Tiara 18" Quilting Table Extension  
(BLTRT16-E)**



**Tiara Quilting Table Overlay  
(BLTRT16-O)**



**Open-Toe Hopping Foot  
(BLTR16-OT)**



**Horizontal Spool Pin  
(BLJ18-HS)**



**TruStitch Stitch Regulator for Tiara  
(BLTRTS)**



# Baby Lock Tiara Components

## Front Side View

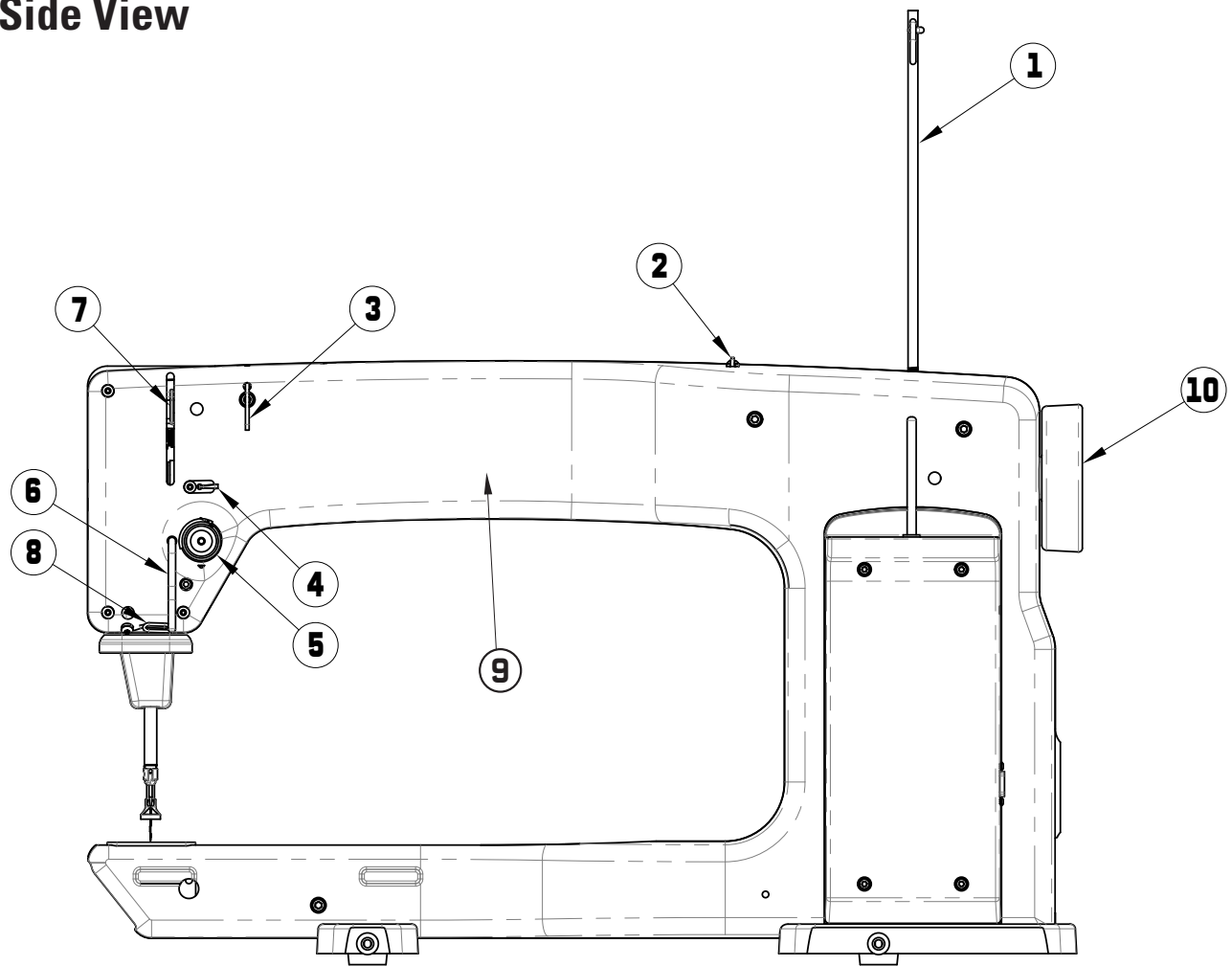


Figure 1

1. Thread Antennae
2. Thread Guide A
3. Three-Hole Thread Guide B
4. Thread Guide C
5. Top Thread Tension Assembly
6. Stirrup Thread Guide E
7. Take-Up Lever
8. Thread Guide F
9. Front Casing/Frame
10. Handwheel

## Back Side View

- 11. Needle Bar
- 12. Needle Bar Thread Guide
- 13. Needle
- 14. Hopping Foot
- 15. Needle Plate
- 16. Presser Bar
- 17. Front Threaded Display Mounting Holes
- 18. Front Base
- 19. Back Casing/Frame
- 20. Rear Base
- 21. Color Touch-Screen Display Connector
- 22. Threaded Horizontal Spool Pin Mounting Hole

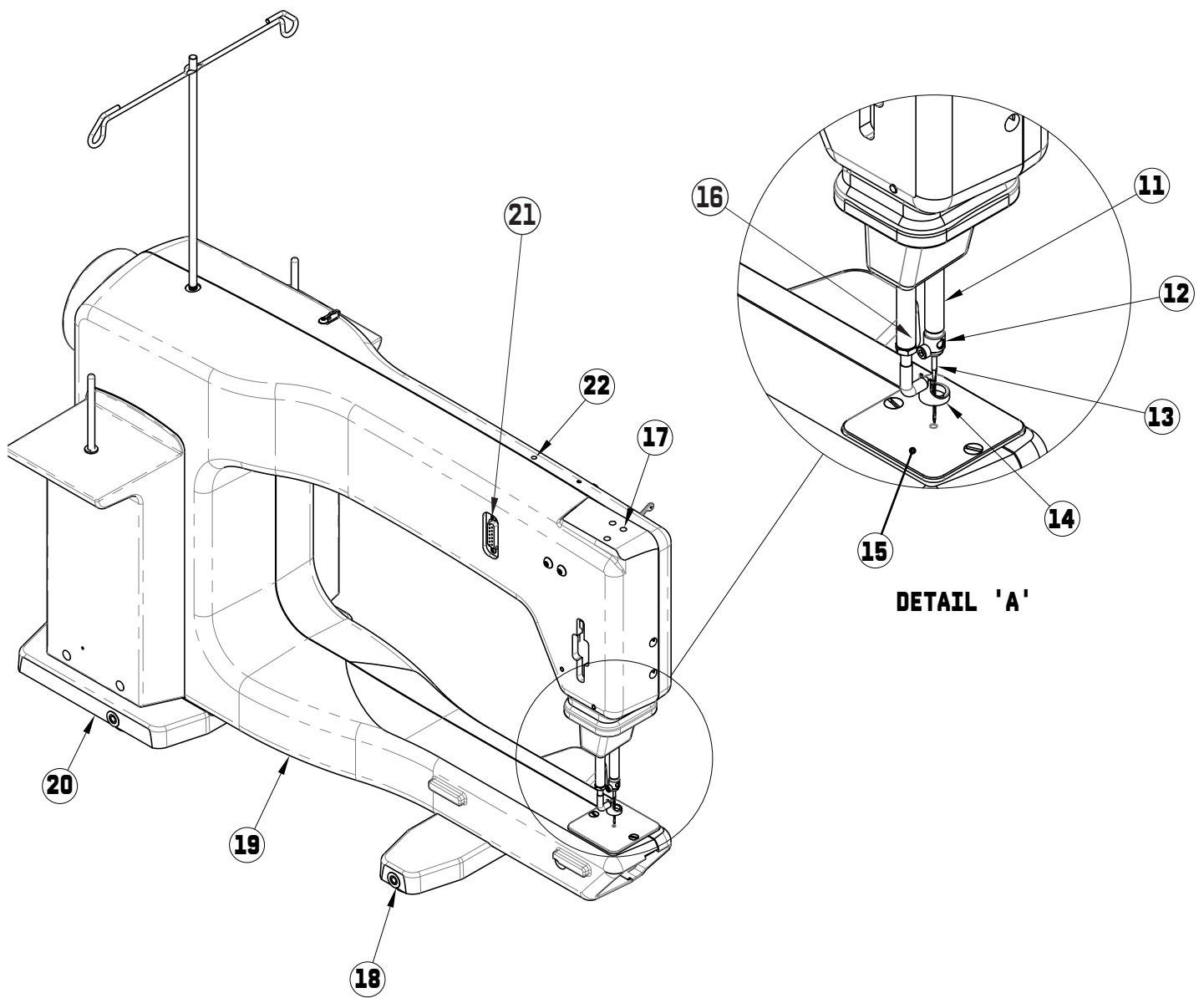


Figure 2

## Rear and Front Views

- 23. On/Off Switch
- 24. Power Cord Connector
- 25. Accessory Power Outlet
- 26. Foot Pedal Connector
- 27. Spool Pin 1
- 28. Electronic Control Pod (C-Pod)
- 29. Bobbin Assembly

- 30. LED Light Ring
- 31. Power Pod (P-Pod)
- 32. Spool Pin 2

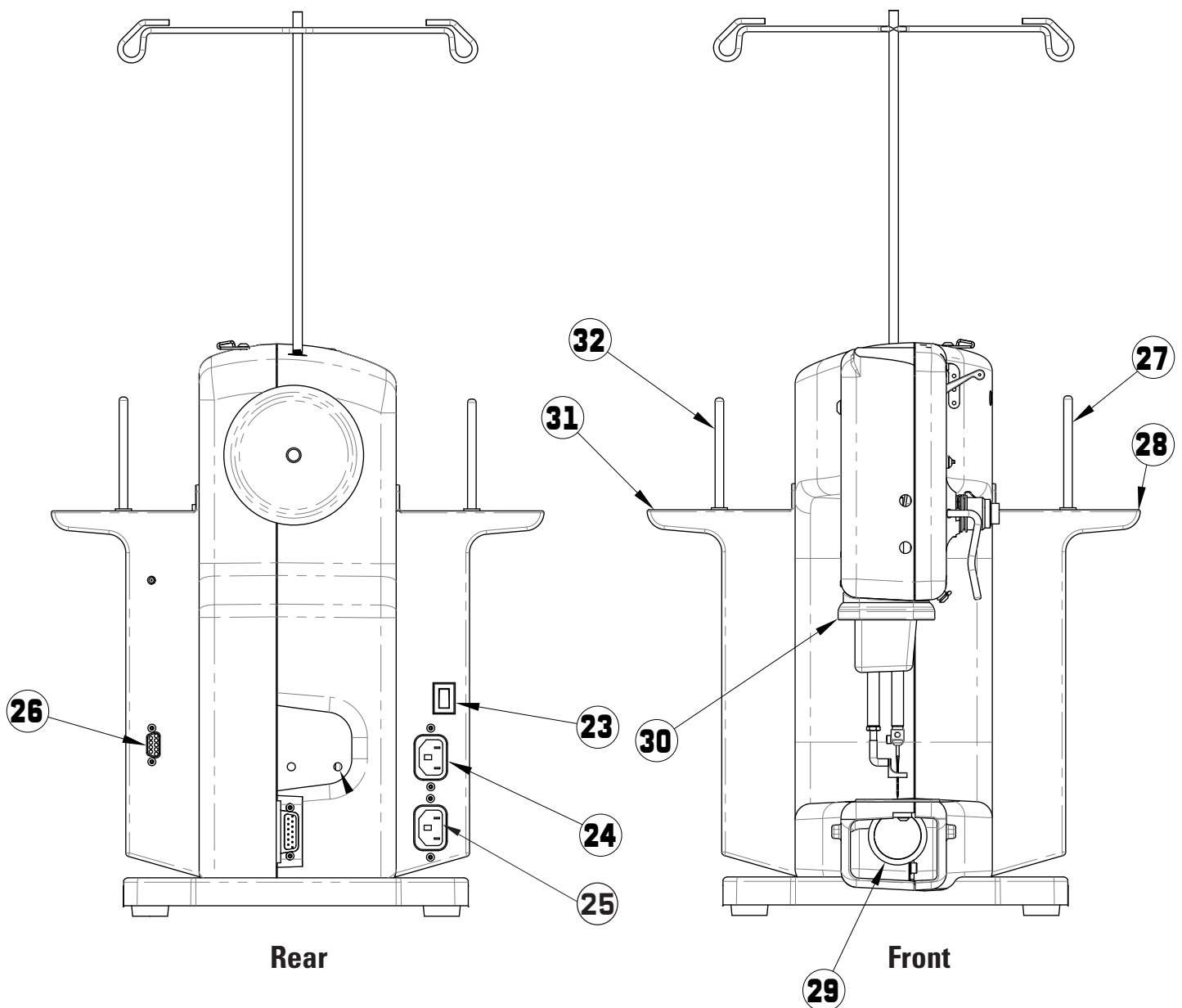


Figure 3

## Setting Up the Table (and Taking it Down for Storage)

The Baby Lock Tiara table has been designed to accommodate the Baby Lock Tiara machine. It has folding legs that are height-adjustable and is heavy enough to provide stabilization for quilting at high speeds.

1. Open the box and gently remove the table, taking care not to drop the table on the floor. The table weighs over 50 pounds, so it is recommended that you ask someone for assistance.
2. Remove shipping brace from underneath quilting table by removing the two bolts holding it in place.
3. Unfold the legs by pulling on the horizontal braces, while being careful not to pinch fingers, until the legs snap into place.
4. Make the table taller by pinching the two height-adjustment tabs on each set of legs and lifting on table, while holding legs down with your foot. Make the table shorter by pinching the same tabs and pushing down on the table.
5. To store the table, remove machine and return legs to their lowest position.
6. The legs are attached to the table top with brackets of two different sizes. One is longer than the other. Identify the long and the short leg brackets.
7. Fold in the short bracket leg first. Push on the horizontal braces to loosen the legs and push them back toward the table top.
8. Repeat with the long bracket leg.

## Placing the Machine in the Table

1. We recommend having someone help lift and place the machine into the table..
2. Lift the machine by putting one arm through the throat space.
3. Guide the machine from the back of the table into the slot. Machine is positioned correctly when the back of the machine is flush with the back of the table.

## Installing the Power Cord



*Figure 4*

Check that the On/Off switch (page 12, Figure 3, # 23) is turned off (the 0 setting). Plug the power cord into the top power outlet on the back of the machine (Figure 4). Do not plug the power cord into a power source at this time.

The lower power connector is available for powering future attachments as they are developed by manufacturer. (Not yet available.)

## Installing the Foot Pedal

1. Plug in the foot pedal cord end into the foot pedal connector (see page 12, Figure 3, # 26).
2. Place the foot pedal under the table where operator can reach it from the front of the machine.



## Installing the Thread Antennae

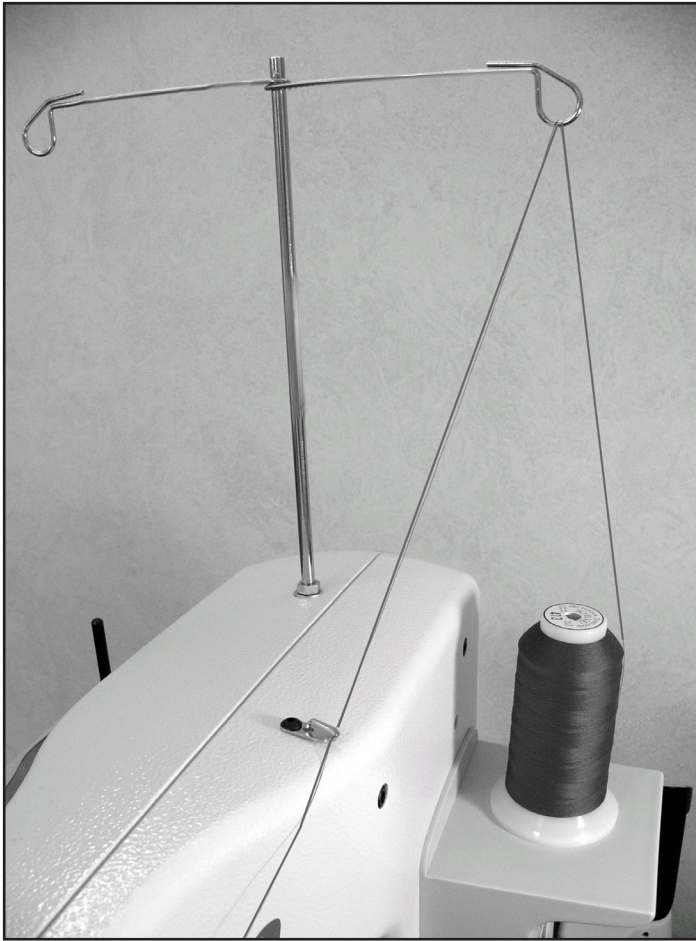


Figure 5

1. Locate the threaded hole on top of the machine near the rear by the handwheel.
2. The thread antennae comes with a washer and a nut. Remove the nut and washer, replace the nut onto the antennae and tighten for two or three turns.
3. The washer protects the painted surface when the nut is tightened. Place the washer on the hole and insert the thread antennae.
4. Turn the thread antennae clockwise several revolutions, stopping when the antennae eyelets are positioned directly over the spool pins.
5. Tighten the nut to secure the thread antennae to the machine.

**NOTE:** The eyelets of the thread antennae *MUST* be centered over the spool pins. This ensures that the thread cone will not pull, turn or tilt, which will cause thread tension problems (see Figure 5).

## Installing the Color Touch-Screen



Figure 6

The color touch-screen comes pre-installed on its mounting bracket and should have one end of the D cable attached to the back of the touch-screen (see Figure 6).

**NOTE:** Confirm that the power is turned off before installing the Color Touch-Screen.

1. Remove the two long bolts from the bag in which they are packed.
2. There are three holes on top of the machine head (see page 11, Figure 2, #17). Only the two holes that are in line with each other are used. Ignore the third hole located to the side of these two holes.
3. Align the holes in the color touch-screen bracket with the two holes on top of the machine, with the touch-screen facing the needle end of the machine.
4. Use a 5mm Allen wrench to insert the two long bolts through the holes of the bracket and into the machine (Figure 6). Tighten in place.
5. Plug the remaining cable end into the display connector located on the side of the machine (page 11, Figure 2, #21).
6. Carefully remove the protective plastic from the touch-screen before using.

## Inserting (or Changing) the Needle

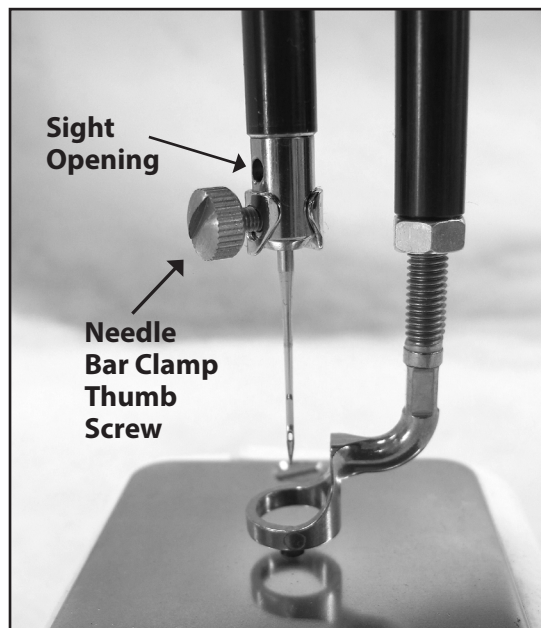


Figure 7

The needle that is in the machine when it arrives at your home has been used for 20 minutes of testing. It is possible that it could be damaged in shipping or as you remove the machine from the box. For these reasons, Baby Lock recommends that you replace the needle before beginning to quilt with your new machine.

1. Move the needle bar to the highest position by turning the handwheel.
2. Confirm that the power is turned off and that the machine is unplugged.
3. Loosen the needle bar clamp thumb screw with the disc-shaped screwdriver or fingers (see Figure 7) enough to assure that the needle can be inserted all the way up to the top of the sight hole.
4. With the scarf (small recess area on the back side of the needle just above the needle eye) facing the handwheel location of the machine, and the long groove down the front of the needle facing the bobbin case side (see Figure 7), push the needle all the way up inside the needle bar – until it can go no further. Look into the sight hole to verify that the butt of the needle reaches the top of the sight hole.

**IMPORTANT NOTE:** *If the needle is not fully inserted inside the needle bar, the machine timing will be off and it may be possible for the needle to collide with internal parts causing damage not covered by warranty.*

5. *Carefully* tighten the needle bar clamp thumb screw. Over-tightening the thumb screw will result in damaged threads or stripping of the screw hole. A side effect of damaged threads from over-tightening the needle bar clamp thumb screw is that it may become difficult to insert the needle properly into the needle bar. Stripped holes are not covered under warranty. When tightening the thumb screw using the disc-shaped screwdriver, gently turn the screwdriver until the screw is tightened snugly. This will avoid over-tightening the screw.

**NOTE:** *Changing the needle is recommended for each new quilt loaded on the machine or any time the needle becomes bent, dull or burred.*

*Needles are inexpensive and are important to the success of your project. Plan to change needles every 5-7 hours of quilting or more often if working with a lot of fusibles or heavy materials. Quilt batting dulls needles quickly.*

**CAUTION:** Never leave machine unattended while plugged in. Always unplug this machine from the electrical outlet immediately after using and before maintenance.

## Needle/Thread Selection Guide

Needle Size	Thread weight
14 (90)	Silk (100 wt) 60 wt., monofilament, glitter, some metallics
16 (100)	60 wt., 50 wt., 40 wt., monofilament, glitter, metallics
18 (110)	50 wt., 40 wt., 30 wt., metallic
20 (120)	30 wt., 20 wt., 12 wt.

## Adjusting the Hopping Foot

The foot is adjusted at the factory and should not be moved without consulting your authorized Baby Lock retailer.



# Threading the Machine

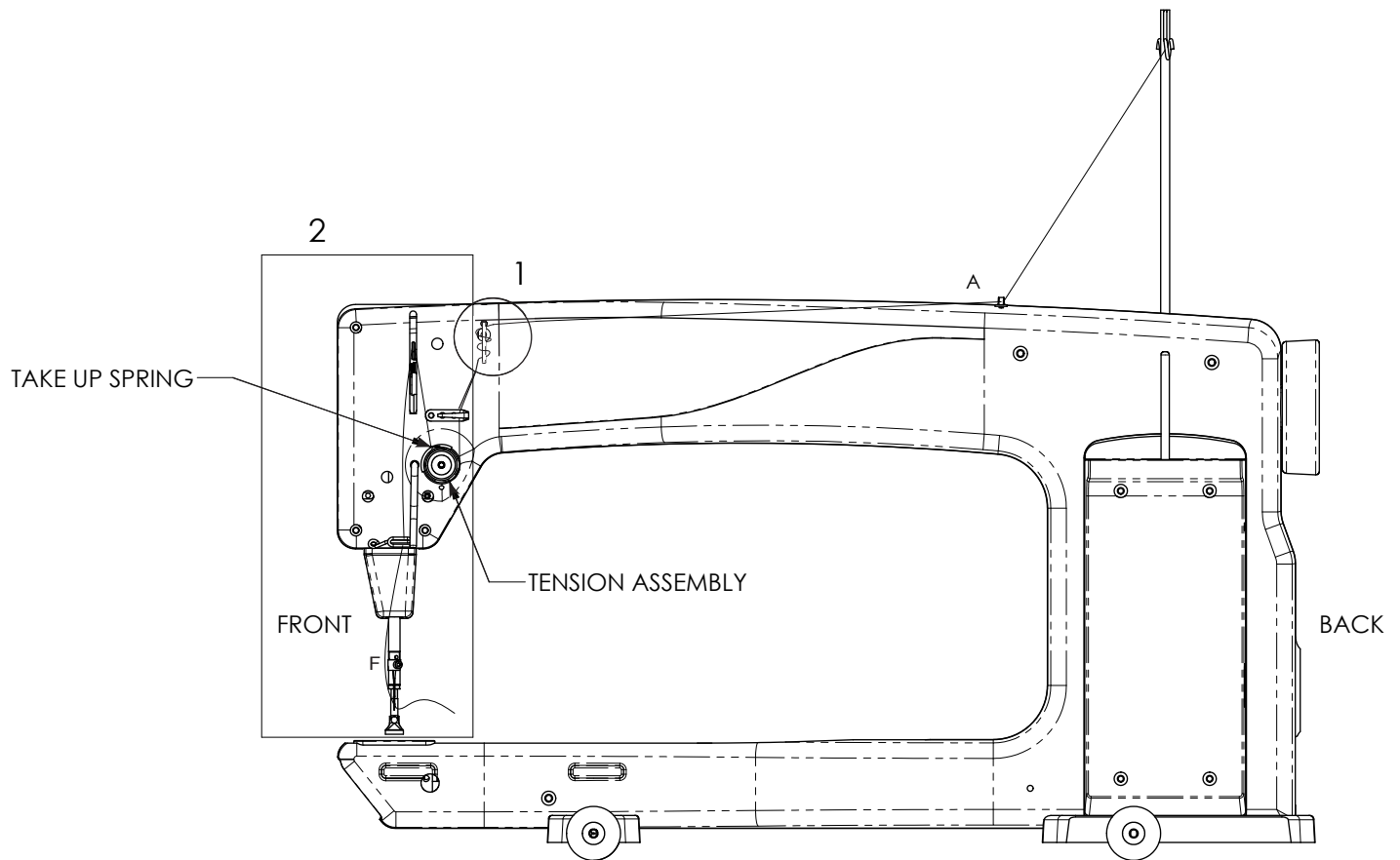
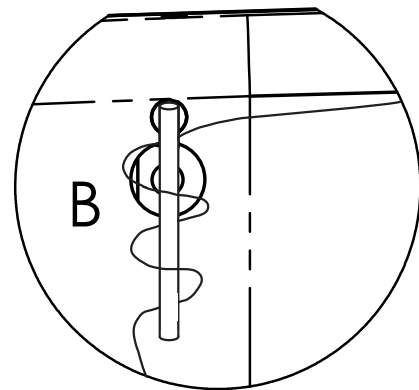


Figure 8

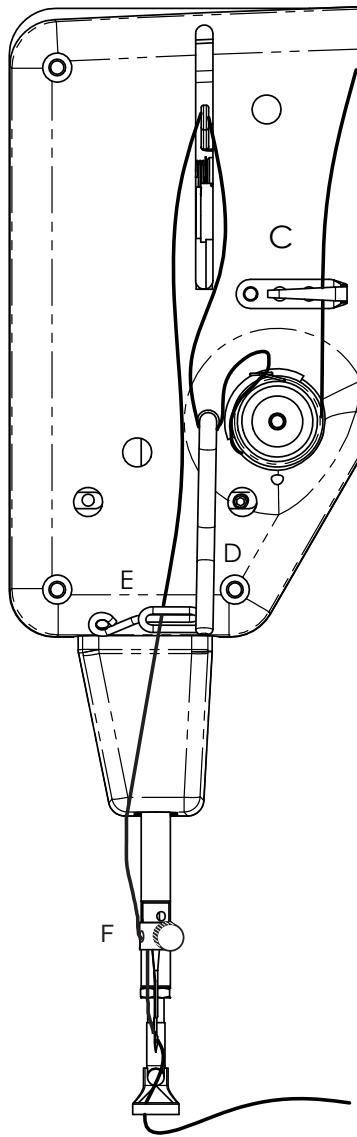
1. Place a cone or spool of thread on the spool pin. If using a spool, make sure that the slits on the spool are against the base of the spool pin holder. Pass the thread through the thread antennae eyelet from back to front, continuing to **thread guide A**. (Figure 8)
2. Continue to the three-hole **thread guide B**. Beginning at the top of the guide, wrap all three holes from back to front, handwheel side to needle side being careful not to cross threads. (see Figure 9).

**NOTE:** The purpose of the three-hole thread guide B is to prevent loops of thread coming off the thread cone from going into the top tension as a knot causing thread breakage and bad tension. For most threads on a cone, it is important to thread all three holes for consistent results and to make adjustments at the top tension assembly. An exception to this rule is when working with very delicate threads, such as holographic or threads that are prone to breakage. You may try skipping one or two holes on thread guide B when using these threads.



DETAIL 1

Figure 9



DETAIL 2

Figure 10

3. Thread continues through **thread guide C**, and then down to the **tension assembly** (see Figure 10).

**NOTE:** *It is important that the thread is “flossed” between the two tension discs. If the thread is not firmly in place between the two tension discs, the thread will rest on the outside of the tension discs (without tension) and looping on fabric or thread nests may occur.*

4. Once the thread is in place, be sure that the thread catches on the **take-up spring** and then pull it down under the **stirrup thread guide D**.
5. Bring the thread back up through the **take-up lever** from back to front, and then down through **thread guide E**. Pull the thread at the take-up lever to ensure that it is properly flossed between the tension disks. If it is properly flossed in the tension disks you should feel some resistance as you pull the thread. If thread is not properly in the tension disks, then the thread will pull freely with no tension. If this is the case, then rethread the machine.
6. Pull the thread down to the **needle thread guide** and thread through the hole for **thread guide F** (see Figure 10).
7. Make sure the thread is following the groove down the front of the needle and insert thread through the eye of the needle from front to back. Be careful that the thread does not twist around the needle.

**IMPORTANT NOTE:** *The Baby Lock Tiara quilting machine does not have a presser foot lever or top tension release like a home sewing machine. On a home sewing machine the top tension is released when the presser foot is raised, allowing the thread to come freely out of the machine.*

*When a home machine is threaded, the presser foot is raised and the tension discs are released and open for the thread to easily fall between the tension discs. This is not the case with the Baby Lock Tiara quilting machine where the **top tension is always tight** and the **tension discs are never open**. Therefore, the thread must be pulled up or “flossed” between the tension discs or it will stay outside the discs and float without tension, causing serious stitch problems and/or thread nests.*

*It is also possible to bend the needle while it is threaded if care is not taken while moving the machine around the quilt because the top tension is never released.*

# Bobbin and Thread Tension Adjustments

## Inserting the Bobbin into Bobbin Case

**NOTE:** To prevent personal injury always turn off the power switch while inserting and removing the bobbin case or anytime your hands are near the needle area.

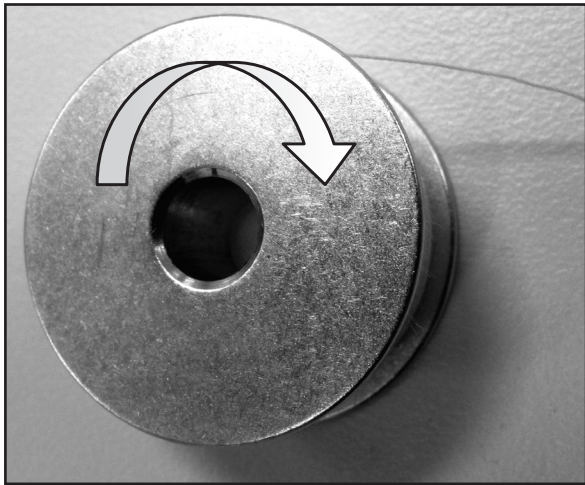


Figure 11

1. Place the bobbin in the bobbin case so that the thread pulls off clockwise when viewing the open side of case (Figure 11).

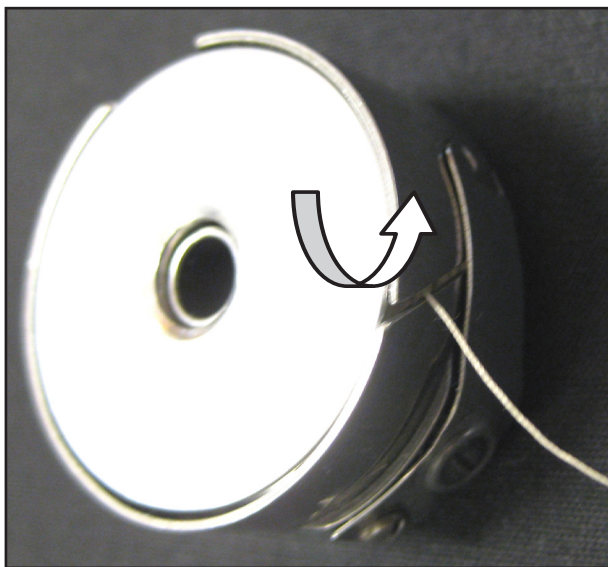


Figure 12

2. Slide the thread through the slot (Figure 12) and under the tension spring leaving 5-6 inches of thread hanging loose (Figures 12 and 13).



Figure 13

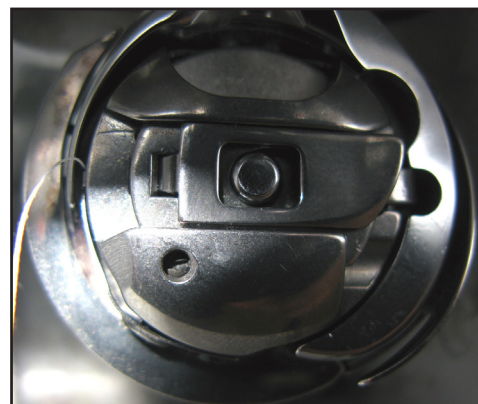


Figure 14

3. To insert the bobbin case into the machine, grasp the bobbin case with thumb and index finger. Do not lift the lever on bobbin case. Fit the bobbin case onto the hook spindle in the machine. Rotate the case until the open throat keys into the alignment notch in the middle of the hook. Push the case in until it stops in place. Push the case inward further until it clicks (see Figure 14). Allow the thread end to hang freely.

**NOTE:** Pulling out the latch lever pushes the bobbin forward in the bobbin case, aiding in removal of the bobbin. The lever should be used only for removing the bobbin case from the machine, not while inserting.

## Drawing the Bobbin Thread to the Top of the Quilt

1. After threading the machine and inserting the bobbin case, plug machine in and turn on the power. Place quilt sandwich under hopping foot.
2. While firmly holding the tail of the needle thread with the left hand, choose one of the following methods to cycle the needle through one full rotation in order to bring the bobbin thread to the top of the quilt.
  - A. Foot Pedal Method: LIGHTLY tap the foot pedal to make the needle go down. Then LIGHTLY tap again to bring the needle up.
  - B. Needle Up/Down Button Half-Stitch: Locate the Needle Up/Down Button in the center of the color touch-screen main display. Press once to cycle the needle down. Press again to cycle the needle back up.
  - C. Needle Up/Down Button, Full-Stitch: Locate the Needle Up/Down Button in the center of the color touch-screen main display. Press and hold briefly to cycle the needle through one complete stitch cycle (down and back up).
3. Pull the fabric 3-4 inches away while holding the needle thread.
4. Bobbin thread will pull up and through to the top, allowing you to grasp the loop and pull it to the desired length.

## Checking and Adjusting Bobbin Case Tension

The bobbin case tension is the foundation tension for the entire machine. To test that bobbin tension is correct, hold the bobbin case in the palm of your hand with the open end facing up. Wrap the thread around your index finger and lift the bobbin case up from your hand. While gently moving the finger in a left to right motion (not up and down, which is not consistent), the bobbin case should slide slowly down the thread, like a spider on its web.

The small screw in the center of the tension spring is where the tension adjustment is made (see Figure 15). Turn clockwise to tighten and counter-clockwise to loosen the bobbin case tension. Turn the tension adjustment screw in small increments. Check the bobbin tension every time a new bobbin is inserted.



Figure 15

## Tighten Bobbin Case Tension

The bobbin case tension is **TOO LOOSE** if it will not lift up onto its side. Turn adjustment screw clockwise to tighten. The bobbin case adjustment screw requires very small adjustments. Think of the “tick of a clock”. Adjust, then check. Adjust and check again.

## Loosen Bobbin Case Tension

The bobbin case tension is **TOO TIGHT** if it lifts out of your hand. Turn adjustment screw counter-clockwise to loosen. The bobbin case adjustment screw requires very small adjustments. Think of the “tick of a clock”. Adjust, then check. Adjust and check again.

## Top Thread Tension Adjustment

**IMPORTANT NOTE:** *Top thread tension should be adjusted only after the bobbin case foundation tension adjustment is made.*

Puckering, gathers and thread breakage occur when the top tension is too tight. Loops and thread nests occur on the back when the top thread tension is too loose. (See Figure 16 on next page.) Tension may need to be adjusted, depending on the fabric, thread or batting used in each project.

Unlike the bobbin case adjustment, which requires minute adjustments (like the tick of a clock), the top tension knob may require turns anywhere from 1/4 of a turn to 2-4 turns to achieve balanced tension.

## Tighten Top Thread Tension

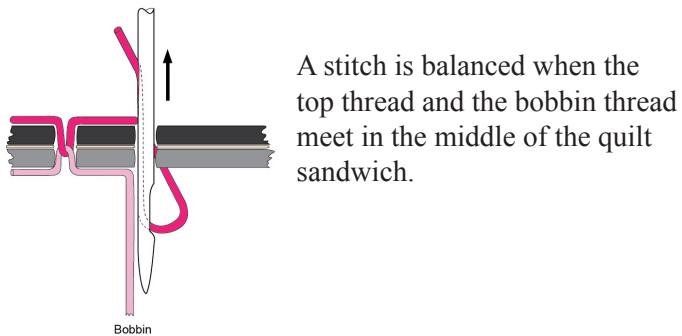
To adjust the top tension tighter, turn the top thread tension knob (page 10, Figure 1, #5) clockwise.



## Loosen Top Thread Tension

To loosen the tension, turn the top thread tension knob (page 10, Figure 1, #5) counter-clockwise.

**NOTE:** Before adjusting the top tension, remember to floss or pull the top thread up into the tension discs otherwise it will float outside the discs providing little or no top tension. This could cause significant tension or nesting problems on the bottom side of the quilt. If the top tension is too loose (causing loops of thread on the underside of the quilt) and no amount of tightening the top thread tension knob seems to affect it, there's a good chance that the thread is riding on the outside of the tension discs and is not "flossed" between them.



A stitch is balanced when the top thread and the bobbin thread meet in the middle of the quilt sandwich.

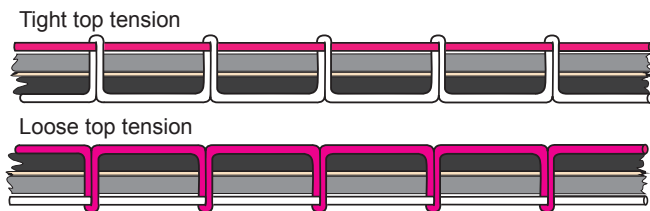


Figure 16

## Maintenance

**NOTE:** Turn off the machine and remove the power cord when performing maintenance on the machine.

### Cleaning and Lubricating the Machine

Only use good quality light sewing machine oil in the Baby Lock Tiara. Internal oiling is not necessary on the Baby Lock Tiara except when the machine is taken to your authorized Baby Lock retailer for routine maintenance and cleaning. The hook assembly, however, needs regular lubricating. Failure to keep the hook assembly lubricated can cause severe damage to the machine.

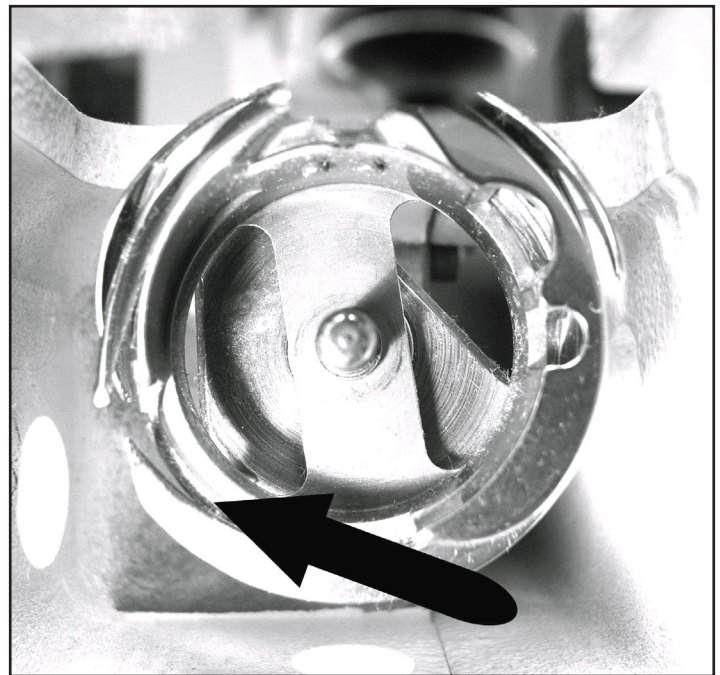


Figure 17

To lubricate, turn off and unplug the machine. Remove the bobbin and bobbin case before oiling. Clean around the hook assembly with a soft brush to remove lint. Put a very small drop of oil on the hook in the region where the bobbin basket assembly and the rotating hook meet (see Figure 17)). The bobbin basket is the portion of the hook that the bobbin case snaps into. The bobbin basket remains stationary while the hook rotates around the basket. The oil lubricates the region where these two components interlock. A drop of oil in the region indicated will work its way back into the interlocking area of the hook and bobbin basket.

The frequency of lubrication depends upon the usage of the machine. Lubricating is recommended before running the machine if it has not been used regularly, or every other bobbin change if used frequently. After oiling, always stitch through a scrap piece of fabric, as oil may cling to thread. Over-oiling can cause excess dripping from the bobbin assembly. Lack of lubricant may be noticed by a change in the sound of the machine and will affect stitch quality.

### Cleaning the Touch-Screen Display

Use a soft clean cloth dampened with isopropyl alcohol to gently wipe the display and remove any marks. Never use any other chemicals to clean your display as they may adversely affect the touch-screen response and clarity.

# Using the Touch Screen Display

## Display Menus

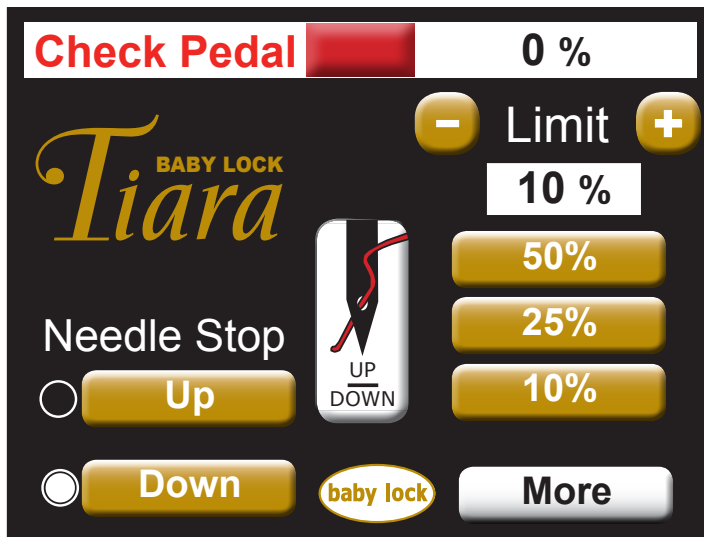


Figure 18

The Baby Lock Tiara has a color touch-screen display on the front of the machine. Settings are changed using this display.

## Main Screen Button Functions (Figure 18)

### Foot Pedal Status

The status of the foot pedal connection is displayed in the top left corner of the Main screen (Figure 18). If the foot pedal is not properly connected the message “Check Pedal” will appear in red letters. Once the foot pedal is connected properly the word “pedal” appears in that space in black letters.

### On/Off Indicator

The box in the center of Figure 19 indicates whether or not the motor is running. It will be red when the machine is stopped and green when the foot pedal is pressed.

### Current Speed

The box in the top right of Figure 19 is the current percentage of full speed the machine is running. The value displayed will vary as you press and release the foot pedal. The maximum percentage value that is displayed is controlled by the Limit that is set for the machine.

### Limit Controls

The Limit box encompasses two main features, the “My Speed” controls and Preset buttons. The My Speed controls consist of “+” and “-” buttons and the white My Speed display box (Figure 20). Pressing the “+” button will increase the maximum motor speed the pedal controls. Pressing the “-” button will decrease the maximum speed.

The My Speed range is between 5% and 100% or between 75 and 1500 stitches per minute (SPM). The current percentage My Speed value is displayed in the white box under the “Limit” text. This My Speed setting will be preserved when the machine is shut off, allowing you to begin quilting again at the same speed when you turn the machine back on.



Figure 19



Figure 20



Figure 21



Figure 22



Figure 23



Figure 24

The second feature of the Limit box are three buttons called Presets that can be customized to your favorite speed settings (Figure 21). Pressing a Preset button will change the “My Speed” setting to the speed shown on that button. This feature makes it quick and easy to switch between different speeds preferred for different types of quilting. For example you may wish to use a slower speed for detail work and a faster speed for stippling. Changing these Preset values is discussed in the “Presets Screen” section.

## More

Pressing the “More” button (Figure 22) will change to the “More” menu screen, which allows access to lighting options, sound options, diagnostics menus, system information, Preset button customization and a calculator.

## Up/Down/Tie-Off

The button with the needle image in the center of the screen can assist you in creating tie-off stitches, basting or needle-positioning functions without the use of the foot pedal (Figure 23). Pressing and releasing the button quickly will send the needle to the next needle stop position. If the needle is up, pressing the button will cause the needle to move to the down position. If the needle is down, it will return to the up position.

Pressing and holding the button for a longer time allows you to do a full stitch. As long as you continue to hold the button down the machine will continue to stitch at a slow rate, and when the button is released the needle will stop in the closest stop position (up or down) available. This action is useful to tie off beginning and ending stitches.

## Needle Stop

When in “Needle Up” mode (indicated by a white circle), the needle ends in the “Up” position upon release of the foot pedal. This button does not move the needle, but simply determines the final needle position after the machine has been stopped. (Figure 24)

When in “Needle Down” mode (the circle is filled in when activated), the needle ends in the “Down” position upon release of the foot pedal. Again, this button does not move the needle, but sets the final resting position of the needle after the foot pedal is released.

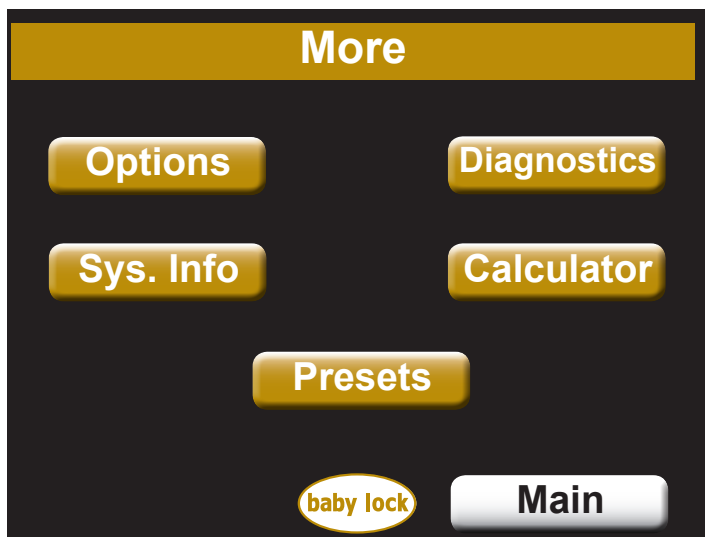


Figure 25

## More Menu (Figure 25)

The More screen allows access to other functions available on the Baby Lock Tiara. (Figure 25)

### Options

Pressing the “Options” button will open a screen that allows adjustment of the sound volume and the LED Light Ring brightness.

### Diagnostics

The “Diagnostics” button activates the screen where machine diagnostic functions can be performed. Diagnostic functions are generally only used when working with your authorized Baby Lock retailer to resolve issues.

### System Information

The “Sys. Info.” Button provides access to machine information. This includes the machine Serial Number, the hardware and firmware version numbers and the Stitch Counters.

### Calculator

An on-screen calculator may be accessed from the “More” screen.

### Presets

Press the “Presets” button to adjust the three available speed presets.

### Main

Press the “Main” button to return to the Main menu screen.



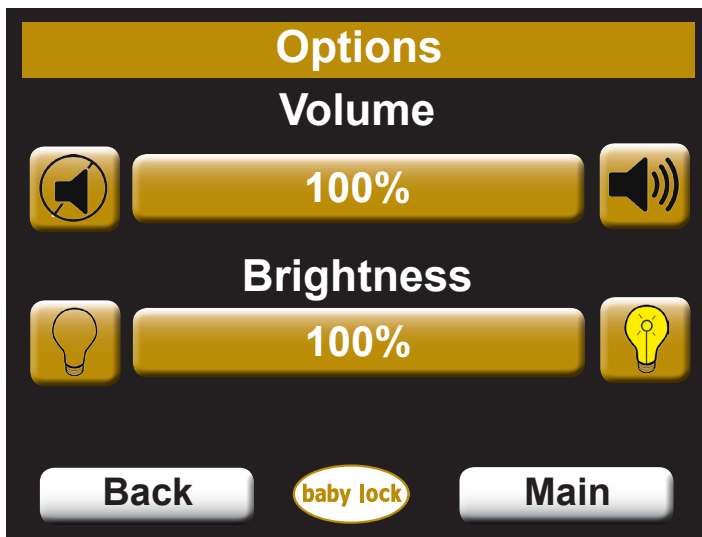


Figure 26

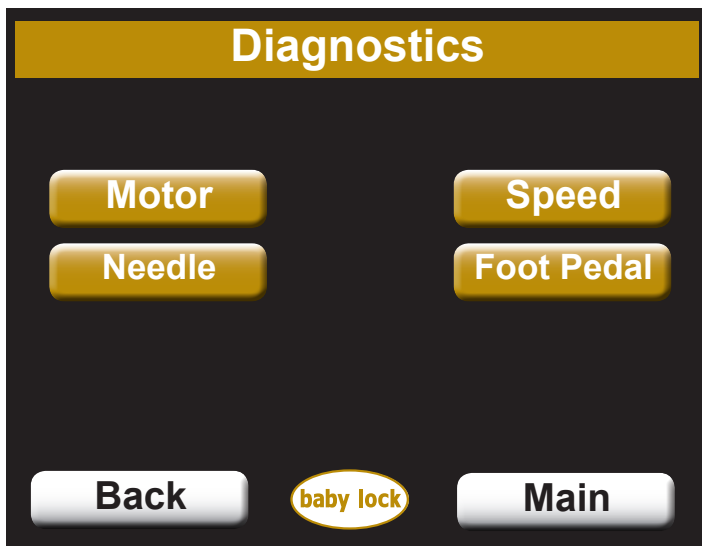


Figure 27

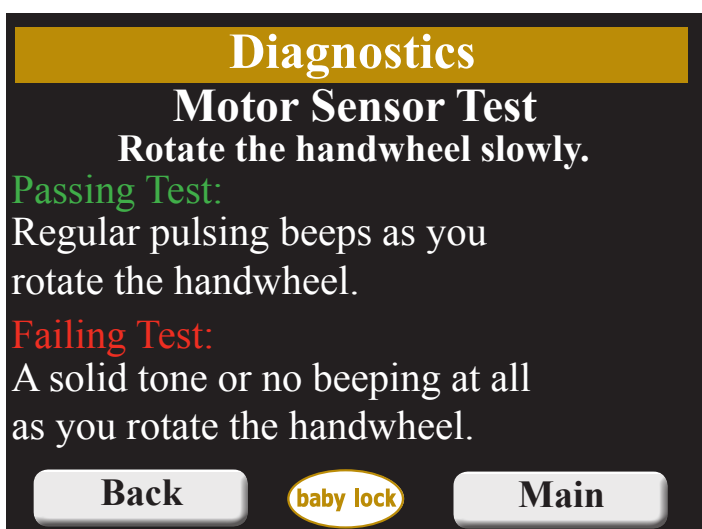


Figure 28

## Options Screen (Figure 26)

### Volume

The “Volume” portion of this screen has two buttons and a sliding control. Pressing on the “Mute” button turns off the sound of the buttons when they are pressed. Pressing the “Max” button turns the volume to its loudest level. Pressing the sliding control in any position sets the volume to the level indicated in that control. Pressing and moving back and forth across the sliding control will change the volume up as it is moved left to right and down as it is moved from right to left .

### Brightness

The “Brightness” portion of this screen has two buttons and a sliding control as well. The LED Light Ring can be turned on completely with the illuminated light bulb button or off completely with the darkened light bulb button. Pressing the sliding control in any position will set the brightness to the value indicated in the slider control. Pressing and moving back and forth across the sliding control will change the brightness up as it is moved left to right and down as it is moved right to left.

Press the “Main” button to return to Main menu screen or the “Back” button to return to the “More” menu screen.

## Diagnostics Screen (Figure 27)

Four different diagnostics tests can be performed on the machine. These functions test the motor control operation, the foot pedal and the internal position sensors.

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.

## Diagnostics Tests (Figure 28)

### Motor Sensor Test

The “Motor” Sensor test can help you determine whether they may be a problem with the Baby Lock Tiara motor. Slowly rotating the handwheel should result in an audible “beep.” If you get a constant solid “beep” or no “beep” at all, this indicates a failed test and the machine should be inspected by your authorized Baby Lock retailer.

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.

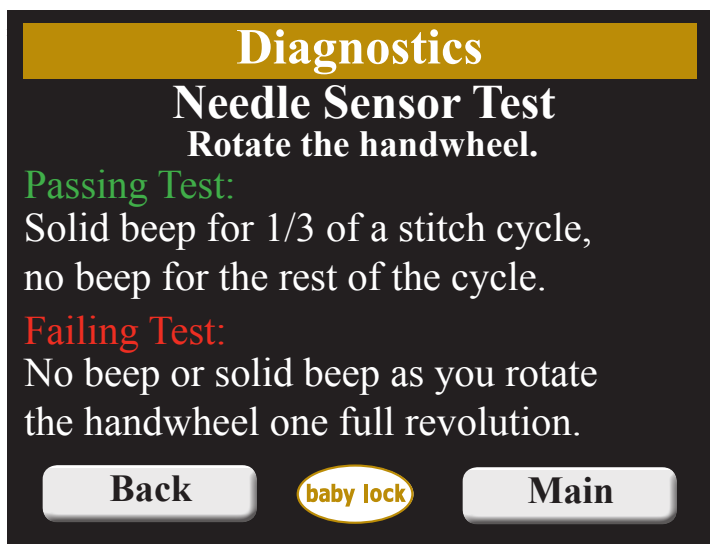


Figure 29

## Needle Sensor Test

The Needle Sensor test will indicate whether the needle position sensor is functioning properly. Rotating the handwheel should result in a “beep” for half of a stitch cycle followed by no “beep” for the other half (Figure 29).

If you hear a constant beep or no beep at all for a full 360° rotation of the handwheel, this indicates a failed test and the machine should be inspected by your authorized Baby Lock retailer.

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.

## Motor Speed Sensor Test

The “Speed” Sensor test can help you determine whether or not there is a problem with the Baby Lock Tiara speed sensor. Before performing this test, remove the bobbin case and the top thread. Press the foot pedal so that the machine will begin slowly rotating. The white box will show a number that should stabilize at 100 if the sensor is functioning properly. Release the foot pedal to stop the machine (Figure 30).

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.

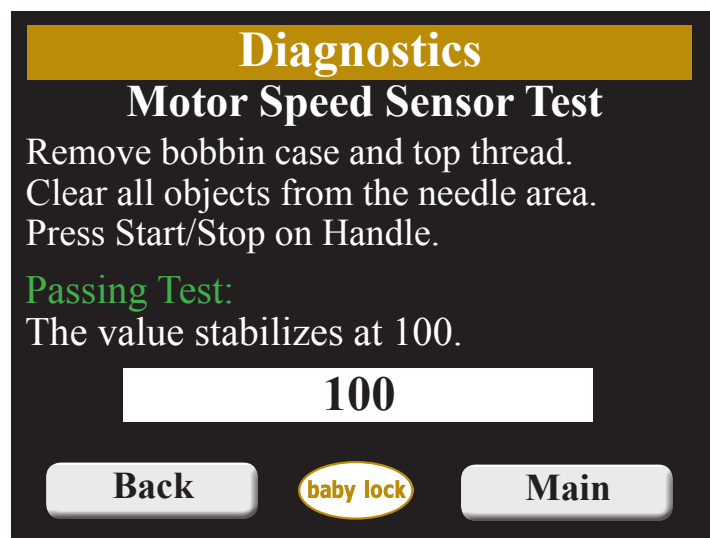


Figure 30

## Pedal Test

The “Pedal” test can help you determine if there is a problem with the Baby Lock Tiara foot pedal. As you slowly depress the foot pedal a percent of depression will appear in the white box. The foot pedal should be controllable from 0 to 100% (Figure 31).

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.

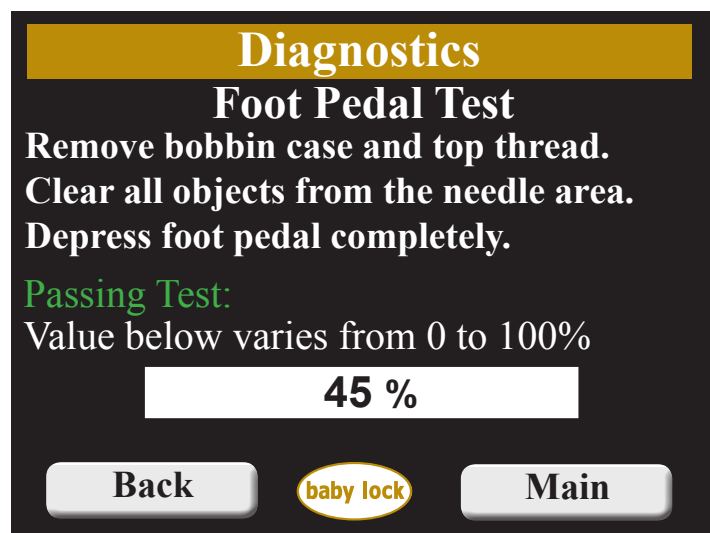


Figure 31

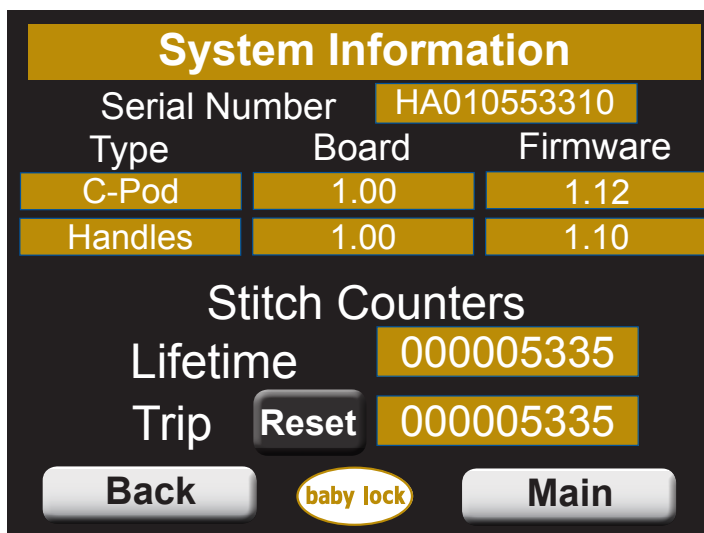


Figure 32

## System Information Screen

The serial number of the machine is displayed at the top of the System Information screen. This number matches the one found on the label at the back of the machine under the rear handlebar.

Information contained in the white boxes below the serial number identifies the electronics board version numbers as well as the firmware version numbers of the Baby Lock Tiara and its handlebars.

The Lifetime and Trip (or project) stitch counters count the number of stitches the machine has performed. The Lifetime count is the total number of sewn stitches since the machine was built. The Trip Counter can be reset to keep track of the number of sewn stitches during a given project. To reset this counter, press the blue “Reset” button found aligned with the Trip counter.

The Lifetime counter cannot be reset and should be used as an indicator to determine when general machine maintenance should be performed by your authorized Baby Lock retailer (Figure 32).

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.



Figure 33

## Calculator Screen

A basic six-function calculator is provided for your convenience (Figure 33). The functions provided are addition, subtraction, multiplication, division, square root and percent. The arrow button on the top right may be used to delete a digit mistakenly entered.

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.

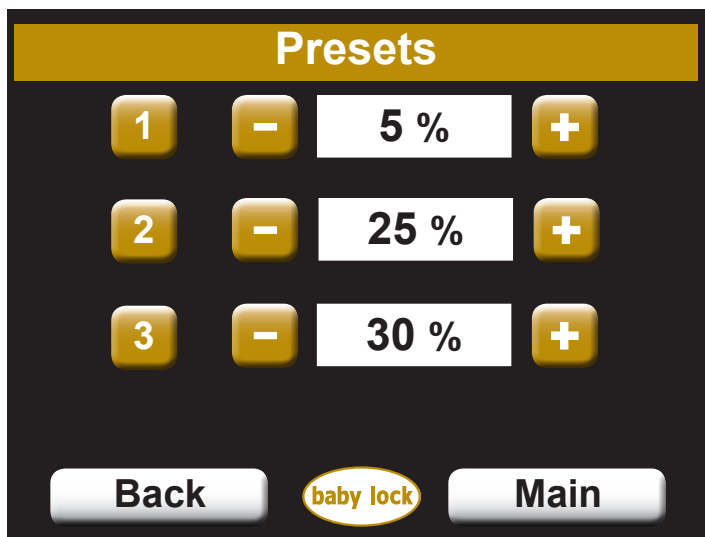


Figure 34

## Presets Screen

Pressing the Presets button will take you to a screen that allows you to customize the preset button speed settings (Figure 34). There is a “+” and “-” button for each of the three presets and a white box that displays the current setting.

The top preset value indicated by the number “1” box on the left adjusts the top button on the main screen. Pressing the “+” button will increase the preset speed and pressing the “-” button will decrease the speed. These presets are saved so that they are preserved even if the machine is turned off.

Press the “Main” button to return to the “Main” menu screen or the “Back” button to return to the “More” menu screen.

# Preparing to Quilt

## Thread Requirements

Threads have a tendency to dry rot over a period of time. Be sure to choose high quality threads for your valuable heirloom quilts. Most machine quilting threads on the market today are acceptable.

## Needle Requirements

For general quilting, a size 16/100 needle will accommodate most threads and fabrics. Heavier threads, such as top stitch and some decorative threads, require a larger needle such as 18/110 or 20/120. Heavier fabrics such as denim, canvas or densely woven fabric may require a larger needle.

## To Prepare for Quilting

With any quilting machine, it is important to understand the basics of free motion quilting. The Baby Lock Tiara does not have feed dogs like domestic machines; therefore, the fabric does not automatically feed under the hopping foot. The operator controls the machine sewing speed with the My Speed setting and the foot pedal, and moving the fabric to get an even, consistent stitch.

In order to become comfortable using the Baby Lock Tiara, quilters can begin with a few simple techniques using a sample quilt sandwich (two pieces of fabric with a layer of batting between them).

Set the machine at a medium My Speed setting (perhaps 25%) then begin moving the fabric until you become accustomed to the resistance and the rhythm of the machine. By moving the fabric faster, the stitches begin to elongate. The My Speed setting can either be increased or the fabric can be moved slower to get the stitches back to the desired length. By moving the fabric slower, the stitches get shorter and can build up on top of each other, breaking the thread or making it extremely difficult to remove threads.

The My Speed setting can be decreased or the foot pedal released slightly, while maintaining a constant motion with the fabric, to bring the stitches back to the desired length.

When quilting, relax your hands and maintain a light touch on the fabric. Gripping the fabric too tightly may cause body tension resulting in poor quilting quality and discomfort.

Different colors of fabric may require different brightness settings for the LED light ring to prevent eye strain.

## Troubleshooting

Skipped Stitches	Corrective Measure
<ul style="list-style-type: none"> <li>The needle is damaged, dull, bent, or installed improperly</li> </ul>	<ul style="list-style-type: none"> <li>Replace the needle often, normally once or twice per day for continuous quilting or at least once per quilt. Use Baby Lock Tiara recommended needles.</li> <li>Always change the needle if the needle has struck any hard object such as a straight pin, etc. The tip of the needle can become damaged or burred, resulting in fabric damage as well as skipped stitches, thread breakage or shredding. Damaged needles cannot always be identified with the naked eye.</li> <li>Always change the needle if it has been hit, bumped or pulled off center while maneuvering the machine around the quilt. A slightly bent needle or needle burr can be a major cause of skipped stitches.</li> </ul>
<ul style="list-style-type: none"> <li>Incorrect needle size</li> <li>Very tightly-woven fabric (such as batiks)</li> </ul>	<ul style="list-style-type: none"> <li>Check for the proper combination of needle size and thread weight being applied to the quilting operation. Some fabrics used in quilting may constrict or impede the thread passing through the front groove of the needle. This diminishes the loop lift required for stitch formation. Typically, a larger needle will solve the problem; however, it has been found that certain smaller sizes of needles as well as the use of ball-pointed needles solve some specific problems.</li> </ul>
<ul style="list-style-type: none"> <li>Needle has not been positioned properly</li> </ul>	<ul style="list-style-type: none"> <li>Position the needle properly to the needle bar. Inspect the position of the needle to make sure the needle is at the 6 o'clock position (see page 15, Figure 7)—If you stand directly in front of the needle (facing the bobbin case side of the machine), you will see the entire needle eye directly facing you. This is 6 o'clock position.</li> <li>Make sure (1) the needle is installed all the way inside the needle bar to the needle stop hole in the needle bar, (2) the long groove in the needle is toward the front (bobbin case side), and (3) the scarf/recessed part of the needle is toward the handwheel. The needle can sometimes be rotated to 5 o'clock (slightly right) or 7 o'clock (slightly left) in order to adjust for a more positive thread loop pickup by the hook point.</li> </ul>
<ul style="list-style-type: none"> <li>Thread tension too tight</li> <li>Improper threading</li> </ul>	<ul style="list-style-type: none"> <li>Loosen top tension. Re-check top and bobbin tension (see pages 19-20).</li> <li>Inspect that the thread take-up lever, thread stirrup or tension spring are all threaded correctly.</li> </ul>
The Needle Breaks	Corrective Measure
<ul style="list-style-type: none"> <li>The needle is bent or not installed properly</li> </ul>	<ul style="list-style-type: none"> <li>Replace or correctly insert the needle. Make sure that the needle is pushed up inside the needle bar clamp until it can go no farther (visually check that it is up to the top of the stop/sight hole above the needle bar clamp screw). Failure to do so can cause damage in the bobbin area and throat plate.</li> </ul>
<ul style="list-style-type: none"> <li>The needle hits the needle plate</li> </ul>	<ul style="list-style-type: none"> <li>Correctly position the needle, needle plate or hopping foot. Replace needle with a new one.</li> </ul>
Stitches are Puckered	Corrective Measure
<ul style="list-style-type: none"> <li>Tension is not balanced</li> </ul>	<ul style="list-style-type: none"> <li>Balance the tension of the needle thread after ensuring the bobbin tension is adjusted correctly (see pages 19-20).</li> </ul>
<ul style="list-style-type: none"> <li>Needle too large for material</li> </ul>	<ul style="list-style-type: none"> <li>Replace the needle with a size better suited to the fabric.</li> </ul>

## Troubleshooting

Stitch Quality is Poor	Corrective Measure
<ul style="list-style-type: none"> <li>Tension is not balanced</li> <li>Bobbin case is damaged, corroded, dirty, et cetera</li> <li>Moving the fabric or depressing the foot pedal inconsistently</li> </ul>	<ul style="list-style-type: none"> <li>Adjust the tension of the needle thread after ensuring the bobbin tension is adjusted correctly (see pages 19-20).</li> <li>Since thread slides over the surface of the bobbin case at a high speed, make sure the case is free of any lint or foreign matter that could impede thread passage through the machine.</li> <li>The My Speed setting should be adjusted to a value that will allow you to sew comfortably and confidently with the foot pedal fully depressed. Discover a method of holding the fabric that is most comfortable.</li> </ul>
Tension Is Poor	Corrective Measure
<ul style="list-style-type: none"> <li>Lint caught under the tension spring in the bobbin case</li> <li>Poorly wound bobbin</li> </ul>	<ul style="list-style-type: none"> <li>With some threads, lint and other material can build up under the tension leaf spring and begin to lift the spring. This reduces the spring's ability to compress against the thread. By inserting a needle under the spring and clearing out the lint, the bobbin tension will return to the previously set tension.</li> <li>If the bobbin is wound too tight or too loose it can lead to poor and inconsistent tension. Make sure when the bobbin is wound that the thread tension is not so tight that the wound bobbin thread feels hard and causes the bobbin sides to bulge. It should also not be so loose that the thread is spongy, which can cause the thread to tangle as it is wound.</li> </ul>
Hand Wheel Won't Rotate	Corrective Measure
<ul style="list-style-type: none"> <li>Thread is entangled and caught in the hook</li> </ul>	<ul style="list-style-type: none"> <li>Turn off the machine and remove the power plug from the electrical outlet. Remove the bobbin case from the machine. Lubricate the hook, then manually rotate the handwheel clockwise and counter-clockwise several times. Remove the thread caught in the hook.</li> </ul>
Thread Nests Under Quilt	Corrective Measure
<ul style="list-style-type: none"> <li>Not enough tension on top thread</li> <li>Improper threading</li> </ul>	<ul style="list-style-type: none"> <li>Check that the machine is threaded correctly. Make certain that the thread is flossed snugly in place between the two tension discs. If the machine is correctly threaded, tighten the top tension by rotating the tension knob clockwise.</li> <li>Refer to the threading diagram and threading instructions on pages 16-17.</li> </ul>
Motor Fails to Run	Corrective Measure
<ul style="list-style-type: none"> <li>On/Off switch is off or power cord is loose</li> <li>Foot pedal is unplugged</li> </ul>	<ul style="list-style-type: none"> <li>Turn the machine on only by using the switch on the back of the power pod. Verify the power cord is plugged in tightly at both the machine and the power source.</li> <li>Verify that the foot pedal is plugged in. If the main screen status message in the upper left hand corner states "Check Pedal", then the pedal is not properly installed.</li> </ul>



## Troubleshooting

Needle Thread Breaks	Corrective Measure
<ul style="list-style-type: none"> <li>• Top and bobbin tension not balanced</li> <li>• Thread cones/spools are poor quality or may have severe twisting or thread rot</li> <li>• The machine head has been threaded incorrectly or thread spools are not positioned correctly</li> <li>• Particles in tension discs</li> <li>• Bobbin rotation is not smooth</li> <li>• Needle is burred, bent, dull, or installed incorrectly</li> <li>• Needle not suited for the thread</li> <li>• Hesitating too long at one point in the pattern</li> <li>• Improper needle/hook relationship</li> <li>• Damage or burr at the needle hole in the needle plate or any other place along the thread path</li> <li>• Wrong type of needle</li> <li>• Other possible causes:</li> </ul>	<ul style="list-style-type: none"> <li>• Check the tension of the top thread tension assembly and bobbin for proper balance (see pages 19-20).</li> <li>• Look for severe twisting of threads when approximately 12 to 15 inches has been pulled off, with ends pinched together. Cotton threads are particularly susceptible to dry rot which makes thread brittle. Do not use poor quality thread, or thread that is rotted or brittle.</li> <li>• Check that the machine is threaded correctly.</li> <li>• Inspect for accidental double wrapping of thread on thread guides.</li> <li>• Inspect the thread antennae making sure the eyelets of the antennae are directly over the spools.</li> <li>• Inspect the vertical positioning of the thread cones. Tipped cones can dramatically affect thread tension and can cause breakage.</li> <li>• Inspect for particles and remove any lint or debris.</li> <li>• Change the bobbin. The slightest hesitation of the bobbin rotation can be the cause of dramatic tension change and thread breakage. Use ONLY Baby Lock bobbins</li> <li>• Change the needle at least once per quilt. Make sure the needle is installed to the top of the sight hole inside the needle bar.</li> <li>• Replace the needle with one better suited for the thread. Use the proper size needle.</li> <li>• Move more quickly so stitches don't overlap or build up. When starting the machine, begin moving immediately. Sewing in one place too long will cause the thread to break.</li> <li>• Timing of the machine is improper. Consult a your authorized Baby Lock retailer.</li> <li>• If the thread is shredding at the needle plate, check for burrs or jagged edges. Gently rub with metal cloth to remove the sharp edge. Consult your authorized Baby Lock retailer to polish any hard to reach or delicate areas, or if the burr is inside the hole.</li> <li>• Use needles recommended by Baby Lock. Using the wrong needle with a smaller shank diameter causes many problems. For example a system 1738 or 287WH needle with a shank diameter of 1.64mm will fit loosely inside the needle clamp at an angle. This may cause skipped stitches because the needle is positioned too far away from the hook point. It can also cause the needle to hit the hook, breaking the needle.</li> <li>• The needle is too close to the hook, which causes friction and a possible collision of the hook point and the needle.</li> <li>• Needle plate damage.</li> <li>• Hook damage.</li> <li>• Broken needle inside needle bar clamp, preventing insertion of the needle to the top of the needle clamp.</li> <li>• Damaged needle bar clamp.</li> </ul>
No Visible Display	Corrective Measure
<ul style="list-style-type: none"> <li>• Cable unplugged</li> </ul>	<ul style="list-style-type: none"> <li>• Check the communication cable that connects the display to the machine and make sure the connection is secure.</li> </ul>



